ment is used, a minimum content of 0.0008% by weight should be observed. When B is included in the alloy, however, sufficient Ti for the binding of the N must be present. For complete binding of N, the Ti content should be provided at at least 3.42*N. The effect of B is saturated in the case of a content of around 0.002% by weight, which thus corresponds to the upper limit.

**[0038]** The microstructure in the end product can be determined, for example, by means of scanning electron microscopy (SEM) and at least 5000-fold magnification. The quantitative determination of the residual austenite can be effected, for example, by means of x-ray diffraction (XRD) to ASTM E975.

**[0039]** A particular crucial factor for the mechanical properties of the end product, aside from the pure phase contents, is the distortion of the crystal lattice. This lattice distortion is a measure of the initial resistance to plastic deformation, which is property-determining owing to the desired strength ranges. A suitable method for the measurement and hence quantification of lattice distortion is Electron Backscatter Diffraction (EBSD). EBSD generates and combines many very local diffraction measurements in order to determine small differences and profiles and local misorientations in the microstructure. An EBSD analysis method using common practice is called Kernel Average Misorientation (KAM; further description in the handbook "OIM Analysis v5.31" from EDAX Inc., 91 McKee Drive, Mahwah, N.J. 07430, USA), in which the orientation of a measurement point is compared with the orientation of the neighboring points. Below a threshold value, typically of 5°, adjacent points are assigned to the same (distorted) grain. Above this threshold value, the adjacent points are assigned to different (sub)grains. Owing to the very fine microstructure, a maximum step width of 100 nm is chosen for the EBSD analysis method. For assessment of the Q&P steels, the KAM is evaluated in each case in relation to the current measurement point and its third-closest neighboring point. The Q&P steel has a microstructure composed of annealed and non-annealed martensite with proportions of residual austenite. Bainite is preferably present only in a small proportion in the microstructure. The desired microstructure is characterized by a defined local misorientation in the iron lattice. This is quantified by the KAM. The end product may have a KAM average for a measurement range of at least 75 μm×75 μm of >1.20°, preferably >1.25°.

**[0040]** In one configuration, the Q&P steel or the component produced from the Q&P steel may have been pickled and/or coated on one or both sides with an anticorrosion coating and/or coated on one or both sides with an organic coating. Preferably, the Q&P steel or the component produced from the Q&P steel has been provided on one or both sides with an anticorrosion coating, especially based on zinc. Particular preference is given to an electrolytic zinc coating on one or both sides. The performing of an electrolytic coating has the advantage that the properties of the Q&P steel are not adversely altered particularly by thermal effects as would occur, for example, in the performance of a hot dip coating operation. Alternatively or additionally, the Q&P steel or the component produced from the Q&P steel may have been provided on one or both sides with an organic coating, preferably with a lacquer. In this way, Q&P steels or the components produced from the Q&P steel may be provided for high-wear applications with an improved painted look.

**[0041]** In a further configuration, the Q&P steel or the component produced from the Q&P steel has a material thickness between 1.5 and 15 mm, especially a thickness between 2.5 and 10 mm, preferably between 3.5 and 8 mm.

**[0042]** In a further configuration, the Q&P steel is used to produce a component which is used in construction machinery, agricultural machinery, mining machinery, transport machinery or conveyor systems. Preferably, the component produced is a grab, especially for a scrap grab or part thereof, or a shovel, especially for an excavator or part thereof, especially for earthmoving, or part of a conveying apparatus, especially for conveying abrasive suspensions or solid substances.

## BRIEF DESCRIPTION OF THE DRAWING

**[0043]** There follows an elucidation of the invention in detail with reference to a drawing that shows a working example. The drawing shows:

**[0044]** FIG. **1**) a perspective view of an excavator shovel.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

**[0045]** The sole FIGURE shows an excavator shovel (**1**) in a perspective view. The excavator shovel (**1**) is a welded construction assembled, for example, from three components (**2**, **3**), from a complex-shaped half-shell (**2**) and two side components (**3**) cohesively bonded to the half-shell (**2**) for producing a cavity (**4**) which is open to one side and serves to accommodate material to be cleared (not shown). Over part of the circumference of the semifinished product (**2**), four embossments (**2.1**) running parallel to one another, especially for reinforcing the excavator shovel (**1**), have been molded. The molding of the embossments (**2.1**) allows the material thickness (t) of the half-shell (**2**) to be reduced compared to a half-shell without embossments for the same performance, such that the total weight of the excavator shovel (**1**) can be reduced and the loading volume at a maximum permissible load of the jib of an excavator can be increased.

**[0046]** The component or half-shell (**2**) consists of a Q&P steel consisting of, aside from Fe and unavoidable impurities from the production, in % by weight:

**[0047]** C: 0.1-0.3%,

**[0048]** Si: 0.5-1.8%, preferably Si: 1.0-1.6%,

**[0049]** Mn: 1.5-3.0%, preferably Mn: 1.9-2.7%,

**[0050]** Al: up to 1.5%,

**[0051]** N: up to 0.008%,

**[0052]** P: up to 0.02%,

**[0053]** S: up to 0.003%,

**[0054]** optionally with one or more elements from the group of "Cr, Mo, Ni, Nb, Ti, V, B" with

**[0055]** Cr: up to 0.4%, preferably Cr: 0.15-0.35%,

**[0056]** Mo: up to 0.25%, especially Mo: 0.05-0.25%,

**[0057]** Ni: up to 1.0%, especially Ni: 0.25-1.0%,

**[0058]** Nb: up to 0.06%, especially Nb: 0.01-0.06%,

**[0059]** Ti: up to 0.07%, especially Ti: 0.02-0.07%,

**[0060]** V: up to 0.3%, especially V: 0.1-0.3%,

**[0061]** B: up to 0.002%, especially B: 0.0008-0.002%.

**[0062]** For production of a Q&P steel, a steel alloy with the aforementioned composition is melted and cast to a slab or thin slab. The slab or thin slab is heated through at a temperature between 1000 and 1300° C., and hot rolled to give a hot strip with a material thickness between 1.5 and 15